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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

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Date	February 27, 2006	Reg. No.	45,725

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Jefferson E. Odhner, et al.
Serial No.	:	09/836,685
Filed:	:	April 17, 2001
For:	:	Direction of Optical Signals By a Movable Diffractive Optical Element
TC/AU	:	2872
Examiner	:	Arnel C. Lavarias
Attorney Docket No.	:	LUC 2-026-3-1

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APPELLANTS' BRIEF ON APPEAL

Sir:

Responsive to a final Office action mailed August 4, 2005 and an Advisory Action mailed December 7, 2005, Appellants submitted a Notice of Appeal on February 3, 2006. Submitted herewith in triplicate is Appellant's Brief on Appeal as prescribed in 37 C.F.R. § 41.31. Reversal of the primary examiner's rejection of the appealed claims and their allowance is respectfully requested.

The requisite fee of $250.00 as required in 37 C.F.R. § 1.17(c) is submitted herewith. Any additional payments that may be required should be charged to Deposit Account No. 13-4830.

Respectfully submitted,

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Jane Keeney

Jane Keeney

Appeal Brief

By: Jefferson E. Odhner, et al.

U.S. Serial No. 09/836,685

Filed April 17, 2001

“Direction of Optical Signals By a Movable Diffractive Optical Element”

Examiner Arnel C. Lavarias

Technology Center 2800

Table of Contents

Real Party in Interest

The appealed application has been assigned by Appellants to and currently is owned by Luckoff Display Corporation, an Ohio corporation located in Columbus, Ohio.

Related Appeals and Interferences

There are no related appeals or interferences known to applicants, their legal representatives, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

39 claims were submitted with the application as originally filed.

An Office action was mailed June 25, 2002 with a 16-way species election. On July 24, 2002, Appellants responded by electing Species I including claims 1, 3, 17, 31, and 32.

In the next subsequent Office action mailed September 16, 2002, all claims were rejected under 35 U.S.C. § 102(e) as being anticipated by Bernstein (U.S. Patent No. 6,388,789) and under 35 U.S.C. § 103(a) as being unpatentable over Kompfner (U.S. Patent No. 4,337,993) in view of Odhner, et al. (U.S. Patent No. 5,613,022). On December 16, 2002 Appellants filed an Amendment and Response including amendment of claims 1, 17 and 32 to include the feature of claim 31. On January 15, 2003, Appellants corrected a typographical error in the argument section of their December 16, 2002 amendment.

On February 6, 2003, a final Office action was mailed withdrawing the rejection of the claims under 35 U.S.C. § 102(e) but maintaining the rejection of all claims 1, 3, 17, and 32 under 35 U.S.C. § 103(a) in view of Kompfner and Odhner, et al. On April 30, 2003, Appellants submitted a Response after Final responding to the Examiner's arguments.

On May 19, 2003, an Advisory Action was mailed maintaining the rejection of claims 1, 3, 17, and 32 under 35 U.S.C. § 103(a) in view of Kompfner and Odhner, et al. On August 5, 2003, Appellants filed a Request for Continued Examination with a proposed claim amendment. Following an interview with the Examiner, Appellants submitted an amendment of claims 1, 17, and 32 on September 26, 2003.

October 28, 2003, the Examiner issued an Office action withdrawing the previous rejection and entering a new ground of rejection. Claims 1, 17, and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura (U.S. Patent No. 5,450,512) in view of Kompfner and Essemlali, et al. (FR 2,538,131). Claim 3 was also rejected under Asakura, Kompfner, and Essemlali in further view of Mey, et al. (U.S. Patent No. 5,608,278). April 28, 2003, Appellants submitted a response arguing the claims over the cited references.

On July 21, 2004, the Examiner issued an Office action maintaining the rejection of the claims and making the rejection final. Appellants filed an Amendment and Response on August 16, 2004 amending all claims 1, 3, 17, and 32.

August 30, 2004, the Examiner issued an Advisory Action indicating that the proposed amendment required further searching. Responsive to the Advisory Action, Appellants filed a Request for Continuing Examination on September 27, 2004.

On November 29, 2004, the Examiner issued an Office action maintaining the rejection of the claims. On May 25, 2005, Appellants submitted an Amendment and Response in which claims 1, 17, and 32 were amended.

On August 8, 2005, the Examiner issued a Final Office action withdrawing the previous grounds of rejection and entering a new ground of rejection. Claims 1, 17, and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of newly cited Doggett (U.S. Patent No. 4,528,448). Claim 3 also was rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura and Doggett and further in view of Mey. Appellants filed a Response to these rejections on November 30, 2005.

Finally, on December 9, 2005, the Examiner issued an Advisory Action indicating that the rejections were maintained.

Status of Amendments

All of the amendments submitted by Appellants have been entered.

Summary of Claimed Subject Matter

The invention is directed to a simple and elegant method and system for distributing one or more input signals among one or more output stations using a rotatable diffractive optical element (RDOE). Independent claim 1 is directed to the method of the invention and first recites providing an RDOE having a surface carrying a holographic diffraction grating including an array of superimposed facets. Each of the facets carries one or more diffraction gratings which are superimposed, each diffraction grating being angularly offset with respect to each other. (Claim 1, step (a) at lines 3-7; Application, page 13, line 34-36 and Fig. 9)

A source of input optical signals, each being associated with a given wavelength, are directed onto the RDOE to generate output signals. (Claim 1, step (b) at lines 8-10) The source may be a laser diode assembly, optical cable, fiber, or any other device or combination of devices capable of supplying optical signals each associated with a particular wavelength or band of wavelengths. (Application, page 4, lines 24-26 and 30-32)

As noted in the specification at page 4, line 33 to page 5, line 8, "RDOE 12 diffracts the input optical signal(s) of source 10 at different angles according to the diffractive equation:

$$\text{(a)} \qquad \lambda = d(\sin \iota + \sin \delta)$$

where,

λ = wavelength of diffractive light (microns)
d = grating spacing of one cycle (microns)
ι = angle of incidence from plate normal (degrees)
δ = angle of diffraction from plate normal (degrees).

For a fixed d and a fixed λ, rotation of the RDOE in effect varies ι to allow different wavelengths to be diffracted at different angles, δ, thereby generating output optical signals." These output signals are shown, for example, in Fig. 1 at 20 and 22, in Fig. 3 at 40-46, and in Fig. 4 at 92 and 94.

One or more output stations are provided for receiving the generated output signals. (Claim 1, step (c) at line 11) An output station may be an optical fiber or any other mechanism capable of detecting or transmitting an optical signal. (Application, page 5, lines 18-19) Output stations are illustrated in Figs. 1 and 2 at 14-18, Fig. 3 at 32-38, Fig. 4 at 88 and 90 and Fig. 5 at 110, 112, and 114. Positioning of the output stations around the RDOE may be in any desired configuration. (Application, page 8, lines 18-19)

By rotating the RDOE, any output optical signals can be distributed to any output stations. Claim 1, step (d) at 12-13. This feature is described, for example, at page 13, line 34

to page 14, line 10 of the specification. For each RDOE position, a particular facet with a particular grating spacing is presented to generate specific output optical signals that are directed to specific output stations. In a relatively simple application, Figs. 1 and 2 illustrate rotation of the RDOE to two different positions. In the first position, shown in Fig. 1, a source 10 directs a plurality of input signals onto RDOE 12. RDOE 12 generates output signals 20 and 22, which are directed to output stations 14 and 16, respectively. In Fig. 2, RDOE 12 has been rotated to a second position wherein output signals 20 and 22 are directed to output stations 16 and 18. See also Fig. 3 (multiplexing application) and Fig. 4 (demultiplexing application). Table II illustrates a more complex scenario involving three output optical signals and three output stations. (Application, page 10, lines 1-5) For eight different RDOE positions, the corresponding eight different signal distributions are shown. Much more complex scenarios are possible, with the number of distribution combinations being limited only by the number of positions to which the RDOE may be rotated.

Independent claim 17 recites the system of the invention, which includes a source, output stations, and an RDOE positioned to intercept the input optical signals from the source for generating output optical signals. The RDOE also is positioned to distribute any output optical signals to any said output optical stations.

Independent claim 32 recites a variation of the inventive method wherein optical signals provided by fiber optic cables or laser diodes as input optical signals are distributed among output stations as output optical signals. Each of the output stations comprises optical connectors positioned to receive the output optical signals. The optical connectors are selectively combinable to permit any combination of output optical signals. The inventive method includes the steps of providing an RDOE, such as that described above, directing the source onto the RDOE to generate output signals, and rotating the RDOE to distribute any output optical signals to any of the output stations. Such a method using optical connectors is described in Fig. 5 and the corresponding section of the specification at page 7, line 27 page 10, line 15.

Grounds of Rejection to be Reviewed on Appeal

Claims 1, 17, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Doggett (U.S. Patent No. 4,528,448).

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura and Doggett and further in view of Mey.

Argument

I. Rejection of claims 1, 17, and 32

None of the cited references teach the distribution of any output optical signal to any output station by a rotatable diffractive optical element having a surface carrying a holographic diffraction grating including an array of superimposed facets, each facet carrying a diffraction grating angularly offset with respect to the other diffraction gratings. As such, the claimed invention is neither anticipated nor rendered obvious by Asakura, Doggett or the combination of Asakura and Doggett.

THE ASAKURA REFERENCE

Asakura discloses an improved optical tap for use in wavelength division multiplexing applications where multi-channel signals are transmitted over a single fiber. An optical tap acts somewhat as a filter to select, or pick off, a particular signal with all other signals being passed. An input fiber is provided which carries a signal composed of a plurality wavelengths. That signal is dispersed by a diffraction grating, each wavelength being dispersed at a different angle. The desired wavelength then is directed to a first output fiber. All remaining wavelengths are directed to a second output fiber. Regardless of how the signals are directed, either via a movable reflecting mirror or diffraction grating, each embodiment disclosed in Asakura includes one input fiber carrying all of the treated signals and a pair of output fibers.

Looking, for example, to Fig. 1, Asakura discloses an optical tap including an input fiber 10 carrying light signals of four different wavelengths identified as λ_1, λ_2, λ_3, and λ_4. Col. 2, lines 55-61. This input signal is dispersed by diffraction grating 12. (Asakura, Col. 2, lines 61-64) The desired wavelength, in this case λ_2, is directed by reflecting mirror 14 to output fiber 19. (Asakura, Col. 2, line 67 to Col. 3, line 1) The remaining wavelengths pass reflecting mirror 14 to diffraction grating 16, which directs all the remaining wavelengths to a second output fiber 18. (Asakura, Col. 3, lines 1-3) A stepper motor, 14a, is provided to change the position of reflecting mirror 14 and thus select the desired wavelength to be tapped from the output fiber 19. (Asakura, Col. 3, lines 27-31)

The additional embodiments illustrate different apparatus that can be used to select the desired wavelength and direct the remaining wavelengths to the output fiber. Figs. 1, 4 and 5 are the same embodiment, except that the diffraction gratings are curvilinear-corrgated diffraction gratings in Fig. 4 and concave in Fig. 5. Figs. 6, 7, and 8 utilize a holding block that incorporates the reflecting mirror and one of the output fibers. Fig. 7 shows the same embodiment as Fig. 6 except with a curvilinear-corrgated diffraction grating, while Fig. 8 uses a concave diffraction grating. For these three embodiments, light of the desired wavelength can

be tapped from the output fiber by rotating the diffraction grating or moving them in the direction of dispersion. (Asakura, Col. 4, line 65 to Col. 7, line 2)

Figs. 9, 10, and 11 illustrate a final embodiment of the optical tap without a holding block. Fig. 9 uses a plane diffraction grating, Fig. 10 uses a curvilinear-corrgated diffraction grating, and Fig. 11 uses a concave diffraction grating.

For all of the embodiments disclosed, Asakura teaches that it is desirable to use a Fourier diffraction grating satisfying the conditions: $0.5\lambda<d<1.5\lambda$ and $0.2d<h<0.5d$, where λ is the used wavelength, d is the spacing between the grooves in the diffraction grating, and h is the depth of the grooves. Using such a diffraction grating provides high efficiency and depends only a little on the polarization of incident light. (Asakura, Col. 5, line 63 to Col. 6, line 30)

Unlike Asakura, the present invention is concerned with more than just picking off a single signal. In addressing more complex systems than that presented in Asakura, the inventors recognized the advantages of using a "rotatable diffractive optical element (RDOE) having a surface carrying a holographic diffraction grating including an array of superimposed facets, each of said facets carrying a diffraction grating(s) which are superimposed, each diffraction grating being angularly offset with respect to each other". (Application, Claims 1, 17, and 32) With this element, distribution of a number of wavelengths of energy among a plurality of output stations is simply and efficiently accomplished. Each position to which the RDOE is rotatable presents a facet with a diffraction grating of a particular spacing which represents a particular distribution of disbursed output optical signals to outputs stations. Because the facets are angularly offset with respect to one another, when the RDOE is rotated to a different position, a different facet with a diffraction grating of a different grating spacing is presented. The input signals are diffracted or dispersed into output optical signals at different angles based on the new grating spacing. The result is a different distribution of output optical signals to output stations. With the proper number of facets, and associated diffraction gratings with the proper grating spacings, any combination of inputs signals to outputs stations may be achieved. As recited in claims 1, 17, and 32, by rotating said RDOE one can "distribute any said output optical signal(s) to any said output station(s)". Since the facets are superimposed holographically, a multitude of different facets may be provided on the surface of a single disk. Using such an RDOE, the claimed invention can perform a simple WDM application, such as tapping a single signal but is capable of much more. With the RDOE, the claimed invention can be used for switching, multiplexing, demultiplexing, or any other application where it is desirable to separate, combine or direct optical signals.

Asakura neither discloses nor suggests a holographic RDOE as is recited by all of the independent claims of the present invention. The absence of this element from the Asakura

reference is not disputed. The Examiner acknowledges that such an element is not present. To overcome this deficiency, the Examiner cites the Doggett reference which is described below.

It also should be noted that Asakura does not teach rotating a diffractive element to distribute any output optical signal to any output station as required by the claims. Even with a simple configuration consisting of a single input a two outputs, Asakura does not teach distributing any input to any output. For example, Asakura illustratively provides input signals λ_1, λ_2, λ_3, and λ_4. Asakura does not teach and, in fact, cannot direct all the input signals λ_1, λ_2, λ_3, and λ_4 to one of the output fibers. Asakura also, for example, does not teach and cannot direct λ_1 and λ_2 to one output fiber while directing λ_3, and λ_4 to a second output fiber. Asakura teaches only directing one wavelength to a first output fiber and all others to a second output fiber. Thus, Asakura is limited to a single distribution.

THE DOGGETT REFERENCE

The Doggett reference is addressed to apparatus for optically encoding information in a mechanical system. (Doggett, Col. 1, lines 7-10) This information may be the angular position of a rotating shaft. (Doggett, Col. 1, lines 12-14) Prior to Doggett, code disks were provided with a number of annular bands mounted at a different radii along the disk. These bands possessed alternating opaque and transparent portions. In use, a light beam impinged the disk as it was rotated and the resulting interrupted pattern of light produced the desired code. The problem Doggett recognized with these disks was that the disks must be accurately centered during use to produce high quality output signals. (See Doggett, Col. 1, lines 12-30)

Doggett's contribution to the art was the recognition that "a multiplicity of linear diffraction gratings placed accurately on a disk (or a structure of any shape which functions like a disk) will diffract a light beam to a fixed point in space independently of the centering of the disk on the axis of rotation." (Doggett, Col. 1, lines 33-39; Col. 2, line 65 to Col. 3, line 1) The multiplicity of diffraction gratings may be provided across the surface of the disk in pie-shaped wedges as shown in Fig. 3A or may be superimposed holographically. (Doggett, Col. 3, lines 41-56) Regardless of the number or type of diffraction gratings used, the system disclosed in Doggett employs a monochromatic light source that impinges on the diffraction gratings located on a continuously rotating disk. As shown in Figs. 1, 2 and 4, the diffracted light from the disk is directed to a single detector located at a fixed location relative to the rotating disk. The detected light is indicative of the position of the rotating disk at any given time. As an alternative to increasing the number of facets, the number of detectors can be increased to provide greater accuracy of position information, as illustrated in Fig. 7B. (Doggett, Col. 4, lines 36-40) Using Doggett's improved encoding disk, the diffracted light can be used, for example, in a printing

system, to scan a photoconductive drum, the diffracted light being modulated to produce a replica of the encoded information in a line on the photoconductive drum. The detected light also is used to control a servo controlled motor to maintain the angular velocity of the disk in the printing system. (See Doggett, Col. 4, lines 45-55)

Doggett is cited solely for the disclosure of a holographic disk having a plurality of superimposed diffraction gratings. Appellants have never contended that this element alone is novel. Such holographic elements are well-known in the art. It is the use of a disk having a holographic diffraction grating with a plurality of facets for signal distribution purposes that makes the claimed invention novel and non-obvious. Such a system and method are neither disclosed nor suggested by Doggett.

THE COMBINATION OF ASAKURA AND DOGGETT

Virtually all inventions are combinations of old elements. *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983). Section 103 specifically requires consideration of the claimed invention as a whole. "Without this important requirement, an obviousness assessment might break an invention into its component parts (A+B+C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention." *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 69 U.S.P.Q. 2d 1686 (Fed. Cir. 2004). For a proper 103 rejection there must be some teaching, motivation or suggestion to combine the references along the line of the claimed invention. *In re Houston*, 308 F.3d 1267, 64 U.S.P.Q. 2d 1801 (Fed. Cir. 2002). States another way, there must be a teaching of the desirability of making the specific combination that was made by the applicant. In re Kotzab, 208 F.3d 1365, 54 U.S.P.Q. 2d 1308 (Fed. Cir. 2000).

Looking to Asakura and Doggett, there simply is no suggestion or motivation to combine these references. Asakura discloses a pre-defined configuration of an input fiber and two output fibers. Asakura's sole purpose is to select a single signal from the plurality of signals transmitted by the input fiber. That signal is directed to a first output fiber and all other signals from the input fiber are directed to the output fiber. A single diffraction grating with a specific grating spacing is sufficient to accomplish this purpose. In fact, the grating spacing is selected to coincide with the relative positions of the input fiber and the output fibers. There is no reason to use a holographic diffraction grating with a plurality of facets such as that described in Doggett. Substituting the Asakura's movable diffraction grating with Doggett's would not

improve the resolution of the optical tap, reduce its cost, or increase its speed. Rather, making such a substitution would add undesired complexity to a relatively simple device. A diffraction grating with a grating spacing other than the one selected to coincide with the input and output fibers would direct signals to undesired locations.

Even assuming, *arguendo*, that the combination of Asakura and Doggett is proper, the combination does not render obvious the claimed invention. Consider first if the skilled artisan simply utilized the holographic diffraction grating of Doggett with Asakura's single input fiber and two output fibers. Even with the multiple facets of Doggett, the Asakura device would act to pick off a single signal for a single output fiber. No change in function or result would occur. Asakura would still function to pick off a single signal with all other signals being

Consider next if the skilled artisan combined the input of Asakura with Doggett's holographic diffraction grating and multiple detectors. As noted above, Doggett uses a series of diffractive gratings on a rotating disk to diffract light to a detector at precisely the correct time to produce an encoded output signal completely independent of the centering of the disk on the axis of rotation. Note that the output of Doggett is a pre-defined distribution pattern. The distribution pattern must be pre-defined in order to indicate the angular position of the rotating disk. This also is true regardless of whether a single detector or multiple detectors (Fig. 7B) are used. With Asakura's input and Doggett's diffractive grating and detectors, the result would be a pre-defined distribution of signals to the outputs. Combining Doggett and Asakura would not teach rotating a diffractive element to distribute any input to any output as required by the claims. It also should be noted that Doggett's outputs comprise detectors rather than fibers or other optical connectors because Doggett is concerned only with the presence or absence of diffracted light at any given output. There is no teaching or motivation to distribute, for example, 2 input signals to one output and 2 input signals to a different output.

Another reason that the combination of Asakura and Doggett does not render obvious the claimed invention is that neither reference teaches a "source of input optical signals" as recited by the claims and defined in the specification. The present invention defines its source of input optical signals very broadly. At page 4, lines 30-31, the specification states that the "source of input optical signal(s)" may be "a laser diode assembly, however, any other device or combination of devices capable of supplying modulated optical signal(s) may be used. Such a device or devices, for example, may include optical cable or fiber." Fig. 4 shows an example of a source comprised of four laser diode assemblies. Neither Asakura nor Doggett disclose such a source. Asakura provides input optical signals of different wavelengths, but all of these signals are transmitted through a single fiber. Doggett is even more limited, disclosing only a single, monochromatic light source. Providing a plurality of input signals from different fibers

and directing those signals to a plurality of output stations in the form of fibers is neither disclosed nor suggested by the limited configurations of Asakura and Doggett. More specifically, creating output optical signals from the input signals and distributing any output optical signal to any output station is not taught or suggested by the combination. One of ordinary skill in the art reading the Asakura and Doggett disclosures would have no guidance with respect to this problem, which was addressed and solved by Appellants.

Because the Asakura, Doggett and the combination of Asakura and Doggett do not teach or reasonably suggest distributing any optical output signal(s) to any output station(s) using an RDOE as claimed, claims 1, 17, and 32 should be considered patentable over the cited prior art.

II. Rejection of claim 3

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura and Doggett and further in view of Mey.

Claim 3 recites that "said RDOE is provided as a magnet having said holographic diffraction grating attached thereto, and being magnetically coupled to a coil energizable for rotation of said magnet and said diffraction grating." Claim 3, dependent on claim 1, should be considered patentable for the reasons given above.

Conclusion

Accordingly, Appellants respectfully urge the Board to overrule the rejection of the appealed claims and to permit the appealed application to pass to issue.

Respectfully submitted,

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CLAIMS APPENDIX

The Appealed Claims

1. Method for treating optical signals from a source thereof, which comprises the steps of:

   (a) providing a rotatable diffractive optical element (RDOE) having a surface carrying a holographic diffraction grating including an array of superimposed facets, each of said facets carrying a diffraction grating(s) which are superimposed, each diffraction grating being angularly offset with respect to each other;

   (b) directing a source of input optical signal(s), each of said input signal(s) being associated with a given wavelength, onto said RDOE to generate output signal(s);

   (c) supplying one or more output station(s); and

   (d) rotating said RDOE to distribute any said output optical signal(s) to any said output station(s).

3. The method of claim 1, wherein said RDOE is provided as a magnet having said holographic diffraction grating attached thereto, and being magnetically coupled to a coil energizable for rotation of said magnet and said diffraction grating.

17. A system for treating optical signals from a source thereof, which comprises:

    a source, a rotatable diffractive optical element (RDOE), and output station(s), wherein

    (a) said source carries input optical signal(s), each of said signal(s) being associated with a particular wavelength;

    (b) said rotatable diffractive optical element (RDOE) has a surface carrying a holographic diffraction grating including an array of superimposed facets, each of said facets carrying a diffraction grating(s) which are superimposed, each

diffraction grating being angularly offset with respect to each other, said RDOE being positioned to intercept said input optical signal(s) for generating output optical signal(s) and distributing any said output optical signal(s), to any said output optical station(s) and;

(c) said output station(s) being positioned to receive said output optical signal(s) from said RDOE.

32. In a method for treating optical signals wherein optical signals provided by fiber optic cable(s) or laser diode(s) as input optical signals are distributed among output stations as output optical signals, each of said output stations comprising optical connector(s) positioned to receive said output optical signals, said optical connectors being selectively combinable to permit any combination of said output optical signals, the improvement which comprises the steps of:

(a) providing a rotatable diffractive optical element (RDOE) having a surface carrying a holographic diffraction grating including an array of superimposed facets, each of said facets carrying a diffraction grating(s) which are superimposed, each being angularly offset with respect to each other;

(b) directing said source of input optical signals onto said RDOE to generate output signals, each of said input signals being associated with a given wavelength; and

(c) rotating said RDOE to distribute any said output optical signals to any said output stations.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.